

## DRAFT Brief Descriptions of Catalog Items

### Transportation Infrastructure Investments

*This document provides brief descriptions of the policy options contained in the corresponding TII Catalog of Policy Actions. The catalog and these brief descriptions will be developed more fully by the Transportation System Investment Technical Workgroup during the project planning process.*

#### **TII-1. BIKE AND PEDESTRIAN INFRASTRUCTURE**

##### **1.1 Bike and Pedestrian Infrastructure**

Improve, construct, and promote sidewalks and bikeways to increase pedestrian and bicycle travel and reduce automobile use. Providing new sidewalks and improving existing sidewalks can shorten pedestrian and bicycle trips. Bicycle lanes can be provided both on shared streets and on segregated facilities physically separated from roadways, except at crossings.

##### **1.2 Walkable and Bike Policy**

Create and implement a regional walkable and bike policy. Promote walkways and biking lanes as well as road-trail connectivity through information dissemination.

##### **1.3 Road-Trail Connectivity**

Increase Road-Trail Connectivity to promote biking and walking.

##### **1.4 Promote Pedestrian Traffic**

Promote pedestrian traffic through information dissemination. Create flyers about the health benefits of walking.

##### **1.5 Sidewalk Construction**

Construct sidewalks citywide where they are currently missing (infill sidewalks).

##### **1.6 Trail Improvement Projects**

Make safety and convenience improvements for Trails to encourage walking and cycling.

##### **1.7 City Bicycle Plan Amendments**

Amend the city bicycle plan regularly to continually improve bicycle transportation.

**1.8 Bicycle Priority Zone**

Construct the planned Depot Bike Station and bicycle priority zone if grant is received.

**1.9 Increase Number of Bike Racks**

Add more bicycle racks citywide at sites identified by a Bicycle Advisory Group.

**1.10 Construct Bike Lanes**

Construct additional bike lanes on major streets. This provides increased safety for cyclist by moving them away from vehicle traffic.

**1.11 Construct Regional Bikeways**

Construct regional bikeways with an emphasis on connectivity and safety.

**1.12 Connect Transit and Biking Systems**

Create connections between transit and biking systems including placing bike racks on local and regional buses, and include bike parking at key bus stops.

**1.13 Upgrade Bike Transportation System**

Create a safe, connected, and easy to navigate bike transportation system (routes, signage, parking, education).

**1.14 Create Signature Bike Projects/Programs**

Work with the city's Bike Ambassador and Mobility Coordinator to create signature bike projects/programs.

**1.15 Facilitate Increased Biking Opportunities**

Offer bike friendly public facilities, transit, and shops through special route maps, increase bike rental locations and promote bike paths that circulate through popular tourist attractions and provide connections to local cycling groups.

**1.16 Traffic Calming Measures**

Incorporate traffic calming measures to make streets more inviting and keep pedestrians and bicyclists safe. Implement walking infrastructure that creates neighborhood identity and promotes safe passages.

**1.17 Adopt and Implement Complete Streets Policy**

Adopt and implement "complete streets" policy to facilitate all modes of travel (public transit, cars, bicyclists, pedestrians) as safely as possible on existing and new streets. This action will help improve pedestrian infrastructure, such as ensuring that sidewalks are continuous and complete, and improving the Americans with Disabilities Act (ADA) access at intersections.

**1.18 Pedestrian/Bicycle Connectivity**

Ensure that pathways are continuous and accessible.

**1.19 Develop Pedestrian Connectors**

Incorporate pedestrian only or pedestrian dominant connectors in urban development.

**1.20 Grade-separated Crossings**

Construct grade-separated crossings to ensure safe and continuous pedestrian/bicycle pathways.

**1.21 Pedestrian Only Streets/Plazas**

Construct pedestrian only streets/plazas or re-designate existing roads. May be coupled with and/or encourage commercial development.

**1.22 Continuous Separated Sidewalks**

Construct continuous sidewalk networks that are visually and physically distinct from nearby roads.

**1.23 Bike/Walk Paths to Parks**

Lower the number of people who drive to parks by providing paths.

**1.24 Bicycle Facilities**

Install secure indoor bicycle parking facilities and/or outdoor short term bicycle racks.

**1.25 Bicycle Parking**

Provide convenient and secure bicycle parking throughout urban areas and at both public and private locations.

**1.26 Street Standards for Bicycle Parking**

Include provisions for bicycle parking within the public right of way.

**1.27 Bicycle Facilities in New Development**

Incorporate appropriate bicycle facilities in new development plans.

**1.28 Weather Protected Bicycle Parking**

Construct weatherproof bicycle facilities or covered parking near building entrances.

**1.29 Changing Rooms, Lockers and Showers**

Providing changing rooms, lockers and showers at centers of employment will encourage employees to ride their bicycles to work.

**1.30 Bicycle and Pedestrian Trails**

Construct multi-use trails to facilitate off-street bicycle and pedestrian travel. Provide bicycle racks along trails.

**1.31 Neighborhood Connectivity**

Maximize neighborhood connectivity to transit stations with walk and bike paths and local transit service.

**TII-2. FREIGHT INFRASTRUCTURE****2.1 Intermodal Freight Initiatives**

This option focuses on strategies to encourage more use of rail freight, for example through improvements to railroad infrastructure and rail yards. In many cases, carrying freight by rail rather than trucks can reduce emissions and fuel consumption, while also reducing congestion on major roadways.

**2.2 Feeder Barge Container Services**

Marine container shipping is often assumed to be too slow for domestic freight, but for example Europe has seen high growth rates in waterborne (especially river) container freight over relatively short distances. This option can also include other waterborne transportation modes such as private boating and ferries.

**2.3 Increase Rail Capacity and Address Rail Freight System Bottlenecks**

Increasing rail capacity may allow some freight to shift from trucks to rail. In addition, rail infrastructure improvements could enable more use of the more fuel-efficient double-stack rail cars.

**2.4 Shift Freight Movements from Truck to Rail**

Economic assistance and regulatory streamlining could improve intermodal rail yards and relieve rail freight bottlenecks.

**2.5 Designated Truck Lanes**

This proposal has the potential to relieve many of the negative truck impacts such as recurrent delay, pavement deterioration, safety, emissions, and design deficiencies. Dedicated truck lanes would also increase reliability in the freeway system. More recent effort has focused on adding dedicated truck lanes for clean technology vehicles along truck-intensive corridors.

**2.6 Highway-Rail Grade Separations**

Implement highway-rail grade separations. Grade separation is the process of aligning a junction of two or more transport axes at different heights (grades) so that they will not disrupt the traffic flow on other transit routes when they cross each other. The composition of such transport axes does not have to be uniform; it can consist of a mixture of roads, footpaths, railways, canals, or airport runways. Bridges, tunnels, or a combination of both can be built at a junction to achieve the needed grade separation.

**2.7 Airborne Transportation Modes**

Implement policies that promote the reduction of GHG emissions from airborne transportation modes.

**TII-3. PARKING INFRASTRUCTURE INVESTMENTS****3.1 Park-and-Ride Lots**

Provide additional funding for park-and-ride lots. This strategy will expand the construction of well-lit, police-patrolled parking locations for car poolers and others to interface with buses, light and heavy rail, and commuter trains in the region.

**3.2 Improve Parking Regulations**

Improve and implement parking regulations such as vehicle restrictions and pricing.

**3.3 Flexible Parking for Streetscape**

Consider flexibility in local parking requirements by examining factors such as access to transit, local car ownership rates, and existing efforts to reduce demand for parking.

**3.4 Parking Spaces**

Implement parking policies with the goal of reducing on-street parking. Options include establishing parking maximums, encouraging shared parking, and commercial off-street parking.

**3.5 Designated Ride-share Parking**

Reserve a certain number or percentage of parking spaces at transit centers and elsewhere for ride-share vehicles.

**3.6 Electric & Alternative Infrastructure**

Provide facilities for electric and alternative fuel vehicles such as guaranteed parking in new development and access to recharging/refueling stations. This can include solar panels at open parking lots or garage facilities.

**3.7 Charging Access in New Development**

Increase parking fees for traditional fossil fuel vehicles in new development.

**3.8 Market Rate Pricing**

Price parking at market rates and eliminate residential/employer discounts.

**3.9 Parking Permit Unbundling**

Unbundle parking permits from residential leases.

**TII-4. ROAD INFRASTRUCTURE****4.1 Transit Priority (Signal Priority, HOV Lanes)**

Improve transit level of service (travel time, reliability, and frequency) for urban buses and light rail through prioritization measures, such as signal prioritization (where a transponder on the transit vehicle accelerates or extends the green cycle on traffic lights, allowing the vehicle to avoid many red lights), or lane-specific prioritization (preemptively turning a red light green in a lane occupied by a bus or in an appropriate turn lane (thus allowing the bus to merge or turn several seconds in advance of other traffic).

**4.2 High-Occupancy Vehicles Lanes**

Increase funding and identify appropriate locations for additional HOV lanes. HOV lanes can be added by converting existing lanes, employing reversible-lane strategies, and creating new road capacity designated for HOVs.

**4.3 Van Pooling and Car Pooling Incentives**

Provide financial incentives or preferential treatment for van pools and car pools, and fund supporting ride-matching programs.

**4.4 Traffic Calming**

Traffic-calming measures, such as roundabouts, speed bumps, and chokers, result in traffic moving at slower speeds and with smoother flow (e.g., roundabouts reduce full stops at intersections).

**4.5 Energy Efficient Lighting along Transportation Corridors**

Install and fund energy efficient lighting along transportation corridors.

**4.6 Pavement Management and Effects on Heat Island Effect**

Install sustainable pavements that minimize the environmental impacts through the reduction of energy consumption, natural resources and associated emissions.

**4.7 Feeder and Distributor Systems- Orbital Routes**

Support feeder and distributor systems. This can include orbital routes, where small buses can be used to serve residential areas and connect them to local destinations such as shopping areas, other neighborhoods, major bus routes, transit stations, schools and multi-generational centers.

**4.8 Smart Streets**

Implement smart street guidelines and standards related to travel-lane width, bicycle lanes, on-street parking, medians, sidewalks, landscaping, lighting, crosswalks, pedestrian refuge islands, bulb-outs, and accessibility ramps.

**4.9 Electrical Charging Stations**

Incentives for accommodating electrical charging stations at strategic locations; this encourages the use of electric vehicles in the future making it more accessible for drivers to recharge the car battery.

**4.10 Major CO2/VMT Reduction Strategies**

Strategies focused on major corridors. These strategies would also take into account the kinds of feeder and distributor systems required for folks to get from home to jobs.

**4.11 Electric Vehicles**

Increase use of neighborhood electric vehicles by providing infrastructure such as parking spaces and signs.

**4.12 Implement Automated Speed Enforcement**

Implement automated speed enforcement to increase on-road safety. Automated Speed Enforcement systems can be an effective tool for managing speed and reducing speed related crashes.

**4.13 Install Ramp Meters**

Install ramp meters that regulate the flow of traffic entering freeways according to current traffic conditions. Ramp meters are claimed to reduce congestion (increase speed and volume) on freeways by reducing demand and by breaking up platoons of cars.

**4.14 Mixed-Flow Lanes**

Since mixed-flow lanes carry more traffic than any other component of our transportation system, mixed-flow capacity enhancements are necessary to address traffic bottlenecks and relieve congestion on heavily traveled corridors. This is especially true in areas outside of the urban core where transit service and the HOV network are not fully developed.

**4.15 Expand HOT Lanes and Toll Road Systems**

Implement and expand upon the existing HOT lane and toll road systems to address congested commuter corridors.

**4.16 Arterial Improvements**

In all parts of the region, operational and technological improvements have the potential to maximize system productivity in a more cost-effective way than simply adding capacity. Such strategic “smart street” improvements include spot widening, signal prioritization, driveway consolidation and relocation, and grade separations at high-volume intersections.

**4.17 High Speed Regional Transport System**

High-Speed Regional Transport (HSRT) system has the potential for relieving both airport and freeway congestion in urbanized areas by providing an alternative to the automobile as well as making less-congested airports more accessible to air travelers, and providing alternative capacity for freight movement in the region. The HSRT system is a long-term vision connecting the region’s ports, airports, and urban activity centers. The system can be constructed in multiple stages that can each be financially viable. The financial performance will be enhanced as the system is extended throughout the region and the volume of users increases.

**4.18 Expand the Intelligent Traffic Corridor Program**

Expand the Intelligent Traffic Corridor (ITC) program, the next generation, synchronized traffic flow system. Well timed signals along major thoroughfares improve traffic flow, which in turn result in lower emissions and reduced fuel consumption when compared to thoroughfares with poorly timed signals.

**4.19 Reduce Pavement Widths**

Reduce pavement widths to pre-World War II widths in an effort to mitigate hardscape heat gain.

**4.20 Include Parkway Strips**

Reinstate the use of parkway strips so that trees may shade streets.

**4.21 Cool Roofs and Paving**

The installation of roof and pavement surfaces with high solar reflection will lower temperatures and energy bills.

**4.22 Pervious Pavement Standards**

Establish standards that provide for pervious pavement options. Pervious pavement utilizes a porous composition to accelerate rain’s absorption back into the groundwater system.

**4.23 Road Width**

Reduce road widths in an effort to calm traffic and promote pedestrian-friendly development.

**4.24 Green Highway Design**

The Green Highways Partnership (GHP) is a voluntary, public/private initiative that aims to encourage the building of green highways and to encourage environmental stewardship through integrated planning, regulatory flexibility, and market-based rewards.

**4.25 Variable Speed on Freeways**

Initial results suggested savings in journey times, smoother-flowing traffic, as well as a fall in the number of crashes.

**TII-5. PUBLIC TRANSIT INFRASTRUCTURE****5.1 Transit Marketing, Promotion, and Pricing Incentives**

Fund enhanced promotion and marketing of transit to achieve greater use of public transit and a consequential reduction in automobile travel. A regional subsidy to encourage the adoption of transit passes and/or allow for a reduction in transit fares could be a part of this program.

**5.2 Expand Transit Infrastructure (Rail, Bus, Bus Rapid Transit)**

Increase funding for new public transportation infrastructure (e.g., rail lines, bus rapid transit routes). Greater use of public transit and reduction in automobile travel can be achieved by expanding public transit expenditure. This option also could include expansion of intercity bus service (e.g., by providing centrally located urban bus terminals or pickup areas). Infrastructure improvements, such as physical track upgrades or the conversion of mixed-traffic lanes to dedicated bus or light-rail lanes, can significantly aid level-of-service measures.

**5.3 Commuter Transit**

This option will improve the commuter transit infrastructure by connecting bus and light rail systems as well as providing parking management measures at transit stations. This option should also include commuter rail.

**5.4 Intercity Bus Transit**

This option also could include expansion of intercity bus service (e.g., by providing centrally located urban bus terminals or pickup areas). Infrastructure improvements, such as physical track upgrades or the conversion of mixed-traffic lanes to dedicated bus or light-rail lanes, can significantly aid level-of-service measures.

**5.5 Bus Rapid Transit**

This option also could include expansion of a city's Bus Rapid Transit infrastructure and availability. Bus rapid transit (BRT) is a term applied to a variety of public transportation

systems using buses to provide faster, more efficient service than an ordinary bus line. Often this is achieved by making improvements to existing infrastructure, vehicles and scheduling. The goal of these systems is to approach the service quality of rail transit while still enjoying the cost savings and flexibility of bus transit. BRT systems come in a variety of forms, such as dedicated busways with their own rights-of-way, bus services using HOV lanes, dedicated freeway lanes and limited-stop buses on pre-existing routes.

## **5.6 Light Rail Transit**

This option also could include expansion of an area's Light Rail infrastructure and availability. Light rail or light rail transit (LRT) is a form of urban rail public transportation that generally has a lower capacity and lower speed than heavy rail and metro systems, but higher capacity and higher speed than traditional street-running tram systems. The term is typically used to refer to rail systems with rapid transit-style features that usually use electric rail cars operating mostly in private rights-of-way separated from other traffic but sometimes, if necessary, mixed with other traffic in city streets.

## **5.7 Create Regional Multimodal Transportation Centers**

Provide funding for multimodal terminals in centralized location(s) where various forms of passenger transportation connect to one another, such as rail, bus, and bikeways. Transfer timing/coordination improvements can be made through both improving and publicizing better connections between bus and/or rail services.

## **5.8 Targeted Infrastructure Growth Incentives**

Provide state and federal funding for targeted infrastructure growth.

## **5.9 Bus Fleet Measures**

Implement bus fleet measures that reduce GHG emissions. Replacement of old bus fleet with new fleet vehicles such as CNG buses etc.

## **5.10 Replacement of Bus Fleets**

Replacement of bus fleets with new low GHG emission vehicles. Promote power system for bus fleets.

## **5.11 Regional Policies on Replacement of Transit Equipment**

Initiate and implement regional policies on replacement of transit equipment.

## **5.12 Station Cars**

Include station cars with car sharing. Establish a station car fleet to encourage ridesharing.

## **5.13 Feeder-Distributor Services**

Include feeder-distributor services at transit stations and nodes.

**5.14 Converting Car Beaches to Mixed Use Development**

Tax and financial incentives to turn car beaches around rail stations in mixed use developed, where the stations would be served by green feeder lines and green distributor lines to move people from station to office parks, down-towns, etc.

**5.15 Reaction and Use of Unused or Lightly Used Rail ROW**

Could yield major reductions in VMT in areas where transit service (BRT, LRT, commuter rail) is already present.

**5.16 Support Extension of Rail Line**

Support the extension of rail lines to reduce congestion. An example is the current extension of the silver metro line going to and from Dulles Airport to Washington, D.C.

**5.17 Village Trolley- Trial Basis**

Consider expanding service if ridership levels are high, but base future decision on sustainability principles.

**5.18 Enhance Bus Stops**

Enhance bus stops citywide by building more shelters and adding benches.

**5.19 Efficient, Convenient Bus Stops**

Make sure that transit bus stops are conveniently placed and able to accommodate commuter volume.

**5.20 Bus Stop Signage & Access**

Design well marked and accessible bus stops.

**5.21 Safe, Clean, Lighted Bus Stops**

Integrate proper lighting at bus stops and maintain aesthetic and clean facilities.

**5.22 Public Transit- Hours of Service**

Extend trolley/bus service from early morning hours to late evening hours, without mid-day breaks, throughout the year (this could be implemented Friday through Sunday in the near term, and throughout the week in the long term), where feasible.

**5.23 Public Transit- Route Structure**

Provide bus or van service with a goal to promote coverage sufficient throughout town.

**5.24 Public Transit- Coordination of Routes**

Connect city bus routes to adjacent routes, and coordinate bus services to ensure connections and to receive additional funding to improve bus access to visitors and employees, including potential transportation to and from train stations.

**5.25 Improve Transit Service (Frequency, Convenience, and Quality)**

Improve existing transit service (e.g., expanding hours and coverage of bus service, higher-frequency bus routes, investments in rail transit) to generate greater use of public transit and a consequential reduction in automobile travel. This option could also include expansion of intercity bus service.

**5.26 Transit Oriented Infrastructure Development in Infill Corridors**

Corridors (along with freeways and highways) function as major transportation facilities and carry tremendous automobile and transit traffic. Therefore, planning more dense/intense development along these corridors, particularly residential and mixed-use development, will facilitate high quality transit service by providing more potential riders. In addition, by providing more residents near commercial and employment uses, the future redevelopment will facilitate residents being able to walk, bike or take transit (rather than drive) to meet their daily needs.

**5.27 Provide Loading, Unloading & Waiting Areas**

Facilitate ride-share programs by providing adequate loading, unloading and waiting areas.

**5.28 Employer-Based and Activity-Center-Provided Transit**

Employer-based and activity-center-provided transit as an alternative to parking, underpinned by tax credits (i.e. Google Bus, Microsoft Connector etc.)

**5.29 Heavy Rail Subway**

Heavy Rail Subway is an active transit mode in Los Angeles.